upon soil characteristics, some discontinuous permafrost areas are more subject to frost heave than others. Given the time to finalize the route survey, field testing to determine soil conditions, and engineering design capability, Alcan should be able to solve the frost heave problem satisfactorily although costs for doing so may vary from initial estimates.

Alcan has stated that it expects to encounter 80 miles of frost-susceptible soil along its right-of-way. It plans to use a passive system which consists of loose fitting insulation and select backfill. This will be supplemented by cycling flowing gas temperatures, thermistor monitoring of the pipeline to detect frost heave problems for corrective action, and periodic patrol and visual inspection based upon accessibility of its right-of-way.

The DOT will review the frost heave site-specific design approach for the Alaska section to assure that the final design will provide the required pipe support, and meet the other pertinent provisions of the Federal gas pipeline safety standards in 49 CFR Part 192. Because frost heave problems occur over a period of time, monitoring of the design, construction, and operation of the Alaska gas transportation system by Alcan and government agencies should detect problem areas early and provide the high level of safety and reliability required.

**Pressure Testing**—Once the pipeline is installed, Federal pipeline safety standards require that pipeline systems be pressure tested before initial operation. Alcan proposes to use a hydrostatic test and preheat the test water to prevent its freezing in the line where buried in permafrost areas. This procedure proved workable on the Alyeska crude oil pipeline. However, the Alyeska pipeline was buried only in areas of thaw-able material and was designed, from a thermal expansion standpoint, to carry warm oil. The Alcan pipeline, on the other hand, will be buried in varied types of soil conditions and designed to carry chilled gas.

The Task Force on Safety and Design concluded that "the proposed Alcan procedure for hydrostatic testing with heated water would not be appropriate in sections traversing permafrost or discontinuous permafrost unless stringent control of test water temperatures is maintained and adequate temperature sensing devices are installed adjacent to the buried pipe." That report also concluded that an approach similar to the one proposed by Arctic Gas, i.e., a hydrostatic test using a water/methanol freeze-depressant solution at stress levels approaching 100 percent specified minimum-yield strength, provided the best assurance that any defects present in the pipe will be disclosed prior to placing the line in service.

Extensive studies were performed by Arctic Gas on the procedures to be used, the manpower to be expended, and the equipment and costs associated with both air and methanol/water testing. The proposed Arctic Gas test plan included procedures for disposing of the methanol after testing and safeguards to be used in the event of a pipeline test failure. Reports to the DOT confirm that there are very few test failures on newly constructed gas pipelines. In the remote event of failure, environmental concerns can be alleviated through development of a spill containment contingency plan and proper method of methanol disposal. Alcan should utilize hydro-
static testing research data developed by Arctic Gas; such information should be made available to Alcan.

Value Design and Performance.—If Alcan constructed a 1260 psi system, it would face few problems with regard to design of valves for chilled service. However, if Alcan increases pressure to 1680 psi, either for the Alaska segment of its line alone or for sections in Canada, additional valve design evaluation will be necessary. Valves currently installed in operating pipelines have not had service experience at those higher pressures with chilled gas temperatures even though some development and test work has been done at the ranges of pressure which were anticipated for the Arctic Gas and El Paso systems. If higher-pressure service is used, valving plans will be reviewed by DOT on a site-specific basis to assure that the designs are consistent with Federal gas pipeline safety standards.

Correlation Between Canadian and U.S. Gas Pipeline Safety Standards.—To assure the overall integrity of the Alaska natural gas transportation system and the continued reliability of service to the U.S., it will be necessary to coordinate specific elements of the Canadian and U.S. gas pipeline safety standards. A review is underway to identify and correlate the various specific features of the Canadian and U.S. standards, and with effective technical liaison between the U.S. and Canadian regulatory agencies, these slightly differing standards should not create any problems. It will be necessary for those regulatory officials monitoring construction of the U.S. pipeline system to be aware of and resolve differences in design, particularly as they relate to acceptable levels of safety and reliability of service.

Design and Active Seismic Areas.—The proposed Alcan route encounters relatively few active seismic areas and the risk of damage to the Alcan system from earthquake activity is small. Alcan crosses no known active faults in Alaska. The Denali fault is approximately 30 miles away at its closest point. In Canada, Alcan traverses the Shakwak fault which is large but not likely to be active. Alcan plans to provide for earthquake protection by wide-shallow ditch design and granular backfill to provide support for the pipe to an 8.5 Richter scale, and to install valves at either side of the fault.

Compressor stations for the Alcan system will incorporate structural design for anticipated earthquake stresses and utilize heavier wall pipe where appropriate.

Potential for Service Interruption—Reliability

Accessibility of the Alcan route by the Ayleska haul road and existing highways in Alaska and in Canada will facilitate proper maintenance of the pipeline system. In certain tundra areas where conflicts may arise between requirements of the Federal gas pipeline safety standards and the environmental protection rules of Federal or State agencies, trade-offs between environmental considerations and pipeline safety and reliability will need to be carefully weighted in specific instances.

The FPC concluded earlier that each of the three systems originally proposed could be operated with a reliability acceptable to the
gas consumers of the United States. The record of pipelines generally shows that their continuity of service is by far the best of any mode of transportation in the United States, and Canadian experience, including experience with the pipelines, in the far north is comparable.

The FPC and the Task Force on Safety and Design also concluded that repair of a pipeline outage on any of the systems as originally proposed would normally be very rapid. Again, the accessibility of the Alcan route to haul roads, work pads, and existing highways would facilitate rapid repair. Special techniques and equipment will be required for repairs in remote tundra areas during the period of summer thaws. Techniques originally planned to be used by Arctic Gas for such repair should be considered by Alcan in its maintenance and repair plans.

EFFICIENCY OF DESIGN AND CAPABILITY OF EXPANSION

It was also suggested in the safety and design report that for economic reasons, Alcan should consider increasing the operating pressure and wall thickness of its 48-inch diameter pipeline in order to allow for more efficient increases in throughput rate for additional reserves which might be committed to the system from either Alaska or Canadian sources.

These physical factors determine the capacity of a gas pipeline:

- Diameter of pipe;
- Operating pressure; and
- The rate (velocity) at which gas moves through the line.

For any new system the first two items are selected in relation to the expected "throughput" of the gas and are then fixed. Any subsequent increase in the capacity of that pipe requires movement of gas at a higher rate. The velocity of gas is increased by adding compression to the pipeline. Compression requires fuel essentially in proportion to the horsepower added. Thus, as more throughput is required in an existing pipeline, horsepower (capital cost) and fuel use (operating cost) will increase.28

The introduction of the additional gas also allows the division of fixed costs by more units of throughput. If the line is operating at less than optimal capacity, the decline in unit fixed costs will be greater than the increase in unit costs for additional horsepower and fuel, and the overall unit cost will decrease. On the other hand, if the pipeline is forced beyond its optimal capacity by addition of yet more compression, the reverse is true: horsepower and fuel increases faster than the declining unit fixed costs, resulting in an increase in overall unit cost of service. Exhibit 4 illustrates the problem.

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28 Horsepower and fuel requirements increase roughly as the difference between the squares of the relative throughput. Doubling the throughput would require about 4 times as much fuel.
RELATIVE COST vs RELATIVE RATE
DIFFERENT DESIGN CAPACITY

THROUGHPUT RATE (RELATIVE)

Total Costs - Design Rate 3
Total Costs/Mcf - Design Rate 4
Fuel Costs & Operating Expenses - Design Rate 3
Fuel Costs & Operating Expenses - Design Rate 4

Obtained and made public by the Natural Resources Defense Council, March/April 2002
Overall, considering the arctic construction, inflationary impacts, and environmental impacts, the ultimate cost to consumers of providing capacity for increased gas throughput would be much lower if the capacity is provided initially by increasing the diameter or working pressure of the pipe, than if it is provided later by adding compressor horsepower or looping the pipeline.

The routing of the Alcan system provides future access to reserves which might be discovered in the Beaufort Sea or elsewhere on the North Slope. Alcan similarly could transport gas from other areas of Alaska or even from the Gulf of Alaska by means of somewhat longer supply laterals. Further, the Agreement with Canada provides for the use by Canada of the Alcan main line at a throughput up to 1.2 bcf/d. Therefore, redesign of the system to enable inexpensive expansibility up to 3.9 to 4.0 bcf/d south of Whitehorse, Yukon Territory, is essential.

CHAPTER VI—ORGANIZATION OF FEDERAL INVOLVEMENT AFTER SYSTEM SELECTION

INTRODUCTION

A frequently cited problem with construction of the Alyeska pipeline was the multitude of Federal Government agencies that severally prescribed and enforced terms and conditions with only minimal coordination of purpose or effort. Uncoordinated government actions can cause needless construction delays and cost increases. Coordinated Federal oversight of project management and construction would:

Provide coherent and uniform rules, and make them clear to the applicant;
Provide consistent enforcement of the rules; and
Avoid rules and bureaucratic procedures that are merely cumulative and would be sources of delay.

ANGTA provides for creation of a new Federal officer, the Federal Inspector for construction of an Alaska natural gas transportation system. Under Section 7(a)(5) of ANGTA, this Federal Inspector shall—

(A) establish a joint surveillance and monitoring agreement, approved by the President, with the State of Alaska similar to that in effect during construction of the trans-Alaska oil pipeline to monitor the construction of the approved transportation system within the State of Alaska;
(B) monitor compliance with applicable laws and the terms and conditions of any applicable certificate, rights-of-way, permit, lease, or other authorization issued or granted;
(C) monitor actions taken to assure timely completion of construction schedules and the achievement of quality of construction, cost control, safety, and environmental protection objectives and the results obtained therefrom;
(D) have the power to complete, by subpoena if necessary, submission of such information as he deems necessary to carry out his responsibilities; and
(E) keep the President and the Congress currently informed on any significant departures from compliance and issue quarterly reports to the President and the Congress con-
cerning existing or potential failures to meet construction
schedules or other factors which may delay the construction
and initial operation of the system and the extent to which
quality of construction, cost control, safety and environmental
protection objectives have been achieved.

While the Federal Inspector can "monitor" the enforcement and
compliance actions of the various Federal agencies, he does not
have any specific enforcement powers. A coordinated regulatory ap-
proach will be elusive unless the Federal Inspector has the ne-
necessary supervisory authority at the field level over enforcement of
terms and conditions to ensure that coordination occurs.

Therefore, as set forth in the Presidential decision, the Presi-
dent will submit to Congress upon approval of the Decision a lim-
ited executive reorganization plan for the very specific purpose of
transferring to the Federal Inspector field-level supervisory author-
ity over the enforcement of stipulations and terms and conditions
from those Federal agencies having statutory responsibilities over
various aspects of an Alaska natural gas transportation system.
This coordinated field level authority over compliance and enforce-
ment activities of the respective Federal agencies is essential to
avoid project delays and minimize cost overruns.

However, the Federal Inspector will be subject to the ultimate
policy direction and supervision of an Executive Policy Board, made
up of the Secretaries of Interior, Energy, and Transportation, the
Administrator of the Environmental Protection Agency and the
Chief of the Army Corps of Engineers. Furthermore, all Federal
agencies will retain their existing authorities, pursuant to section
9(a) of ANGTA, to issue original certificates, permits, rights-of-way
and other authorizations, and to prescribe any appropriate stipula-
tions and terms and conditions to such authorizations that are per-
missible under existing law. Finally, the Agency Authorized Offi-
cers, who will exercise the delegated authorities of their respective
agencies, will directly enforce the stipulations and terms and condi-
tions—subject to the field-level supervisory direction of the Federal
Inspector.

With these organizational proposals, and with the general
terms and conditions set forth in the Decision, the Federal Gov-
ernment will have an expanded role in the oversight of project man-
agement and construction. The oversight authority conferred by the
terms and conditions set forth in the Decision will be far more com-
prehensive than the limited Federal monitoring effort over
Alyeska's project management. If these general terms and condi-
tions are effectively enforced, most of the management abuses asso-
ciated with the Alyeska project should not recur. The general terms
and conditions, however, do not hold the successful applicant to
any specific management approach, but merely provide certain
minimum standards for cost and quality control and timely comple-
tion of construction, which reflect the collective experience and
knowledge gained by the various Federal agencies from involve-
ment with the Alyeska project.
THE ORGANIZATION OF FEDERAL INVOLVEMENT WITH THE ALCAN PROJECT

As noted above, the Federal Inspector will have the field-level supervisory authority over the Agency Authorized Officers who will be assigned on a full-time basis to administer the authorities of the Alaskan Natural Gas Pipeline Office. This Office will consist of administrative and field inspection and monitoring staff working under the direction of the Federal Inspector. The Executive Policy Board will approve the level of staff support, and determine Agency Authorized Officer participation in providing such staff support to the Federal Inspector.

Essentially, the organization of Federal involvement with the Alcan project has three elements:

1. The Federal Inspector.—The Federal Inspector will be a Presidential appointee confirmed by the Senate and is an officer independent of other existing Federal agencies. In addition to his statutory duties under section 7(a)(5), the Federal Inspector will have supervisory authority at the field level over enforcement of terms and conditions, and will otherwise coordinate Federal involvement with the pipeline operator during the design and construction phases of the project. The Federal Inspector is designed to be the principal point of contact with the pipeline owners, the contractors, State agencies, and Canadian entities on matters pertaining to Federal oversight of the project. As chairman of the Executive Policy Board, he should be the executor of its policy decisions. The Federal Inspector also has the power to compel information by subpoena and to issue quarterly reports to the President and Congress concerning existing or potential failures to meet construction schedules and other matters.

2. The Executive Policy Board.—Presidential supervision over the Federal Inspector will be delegated to an Executive Policy Board. The Board would be made up of the Secretaries of the Interior, Energy, Transportation, the Administrator of the Environmental Protection Agency, and the Chief of the Army Corps of Engineers, or their Deputies (or senior officers who have been delegated authority over gas pipeline matters). The Federal Inspector shall serve as the non-voting chairman of the Board.

The Board will provide policy guidance through the Federal Inspector to the Agency Authorized Officers and will be paramount in all policy matters. It will also act as an appellate body to resolve any differences between the agencies and the Federal Inspector, including differences that may arise when the Federal Inspector overrules an enforcement action of an Agency Authorized Officer. In such cases, the Board shall expeditiously resolve any appeal within a specified time period. Otherwise, the Board shall confine itself to policymaking matters, and the Federal Inspector will be the conduit of the Board in carrying out policy.

The Office should be located in Alaska, at least for the construction phase of the project, and later in reduced form for the operational phase. It is probable that preconstruction planning and design will necessitate an Alaska-based pipeline office (e.g., to coordinate site-specific terms and conditions) even though the size of the Washington, D.C.-based staff will be larger in the earlier phases of the project.
3. The Agency Authorized Officers.—These officers will represent and exercise the internally delegated authorities of their respective agencies in matters pertaining to the project. Although these authorities can be exercised only by the respective Agency Authorized Officers, they will be subject to supervision of the Federal Inspector at the field level, and receive policy direction from the Executive Policy Board through the Federal Inspector on enforcement matters.

The Agency Authorized Officers should have no other administrative duties that would require less than full attention to the project, unless the Executive Policy Board consents to waive this requirement in a particular case. It is hoped that the use of Agency Authorized Officers to represent the various agencies will minimize coordination problems between the project applicant and the Federal Government.

IMPLEMENTATION OF ORGANIZATIONAL PLAN

The proposed transfer of field-level supervisory authority to the Federal Inspector should be submitted for approval by Congress in a government reorganization plan, rather than implemented by executive order. This plan will propose a limited, single-purpose transfer of field-level supervisory authority over enforcement of terms and conditions for the duration of the preconstruction and construction phases of the Alcan project. No other transfer of existing authority, or transfer of any coordination function, will be proposed in the reorganization plan.

To avoid the possible overlap with Congressional action on the Presidential decision itself, the reorganization plan will not be submitted to Congress until that decision has been approved. Congress would then have 60 legislative days in which to consider the merits of the plan under the special parliamentary procedures provided by the Reorganization Act of 1977, 5 USC 901 et seq.

The President can immediately issue an executive order creating the Executive Policy Board and by his power pursuant to Section 301 of Title 3, delegate the necessary authority to the Board to carry out its functions. The Board can then make certain initial administrative decisions regarding the Office of Federal Inspector—e.g., the level of staff support for the Federal Inspector, and the possible use of the Army Corps of Engineers for such staff support. In the interim, the Federal Inspector can immediately exercise his responsibilities under existing ANGTA authority to “monitor” compliance by Alcan with applicable laws and authorizations.

COORDINATION WITH THE STATES

In addition to the duty of organizing Federal involvement, the Federal Inspector has the substantial responsibility under ANGTA to establish a joint surveillance and monitoring agreement with the State of Alaska and other affected States. The strengthened field level supervisory authority proposed for the Federal Inspector will be of great assistance in the performance of this statutory responsibility.

The Alcan system will pass through hundreds of miles of land owned by the States, particularly by the State of Alaska. Officials

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of the State of Alaska have previously declared that the State will issue a right-of-way lease to the gas pipeline for crossing these lands, regardless of which project is approved, and have indicated that environmental terms and conditions will be part of this lease.

The States and the Federal Government share responsibility to ensure that lands, water and wildlife are not unnecessarily disturbed by the gas pipeline and that where disturbed, maximum restoration is carried out. The Federal Inspector and Agency Authorized Officers will therefore work with the State of Alaska and with other States in a cooperative fashion both for the protection of the environment and for the expeditious construction of the pipeline. The terms and conditions and stipulations which pertain to State and Federal lands should be as similar as possible. A reasonable accommodation of State and Federal interests is expected with the Federal Government having primary responsibility where the pipeline crosses Federal land and private lands, and with the State Governments having primary responsibility where the pipeline crosses State lands. Cooperative agreements based on these principles have been successful in the recent past, and should be the point of departure for further strengthening the Federal and State cooperation during construction of the gas pipeline.

CHAPTER VII—IMPACT ON COMPETITION IN THE NATURAL GAS INDUSTRY

The antitrust and competitive impact effects of an Alaskan natural gas system have been thoroughly studied by the Federal Power Commission and by the Justice Department under Sections 6 and 19 of the Alaska Natural Gas Transportation Act of 1976. Under section 19, the Attorney General prepared and submitted to Congress on July 14, 1977, a detailed analysis of potential antitrust issues and problems. Under Section 6, the Attorney General submitted that same report to the Alaskan Natural Gas Task Force, along with a commentary on the FPC's findings with respect to competitive impact. In addition, the Justice Department submitted a letter on August 9, 1977, which elaborated its views concerning possible participation by the gas producers in financing the transportation system. A copy of the letter is appended to the end of this Chapter.

Based on these studies, it can be concluded that the Alcan project will have no harmful effect on regional or national competition in the natural gas industry, and that any potential of competitive abuse can be cured by proper federal regulation. In addition, consistent with the Administration's antitrust objectives, producers of Alaskan gas could participate in financing this expensive transportation system through guaranteeing some portion of the project debt.

GAS TRANSMISSION AND DISTRIBUTION INDUSTRY

The Federal Power Commission and the Justice Department agreed that certification of a transportation system for Alaskan gas will not have a significant impact upon competition in the natural gas transportation and distribution industries.
Based on statistics presented in the Justice Department's Report to Congress, the American sponsors of the Alcan project, including PGT, PGE and the Northern Border companies, transport approximately 40 percent of all the interstate natural gas shipped in the U.S. However, in an industry as heavily regulated as natural gas, indices of concentration tend to overstate the potential for anticompetitive behavior. In the presence of effective regulation, the actual prospect of anticompetitive behavior is minimized, and there is only a small risk that the Alcan sponsoring companies could control national or regional gas markets.

GAS PRODUCERS

Alcan has no oil companies or subsidiaries of oil companies among its sponsors. This fact in itself sharply reduces potential antitrust concerns.

Nevertheless, since elsewhere in this Report it is urged that the gas producers participate in financing this project, it is necessary to examine the competitive considerations associated with producer participation. The Attorney General concluded that "present Federal Power Commission regulation appears to preclude an opportunity for competitive abuse by the gas producers." However, the Department warned that if wellhead prices were decontrolled or substantially relaxed, some opportunity might arise for producers, if they owned or controlled the transportation system, to transfer profits from the regulated transportation operation to their unregulated upstream production operations.

The Department of Justice indicated that its concern about producer ownership or control of the pipeline does not preclude producer participation in financing the system. For example, consistent with antitrust objectives, producers could be involved in guaranteeing a portion of the project's initial debt or cost overrun debt. To assure antitrust insulation, any producer role in the management of the transportation system prior to its becoming operational should be the minimum necessary to protect the producers' investment interest but in any event should not permit producers to engage in anticompetitive conduct. In addition, producer debt guarantees should terminate upon completion of the project and commencement of the tariff. Finally, the Federal Power Commission should utilize its approval power over gas purchase contracts, and more generally, over project financing plans, to ensure that any conditions producers impose in exchange for debt guarantees do not create situations which might permit abuses of competition.

Thus, as is urged elsewhere in this report, gas producers could guarantee portions of the project debt consistent with this Administration's antitrust objectives.

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Overall, we conclude that the potential for anticompetitive abuse by either the gas transmission and distribution industry or the gas producers (to the extent they might participate in guaranteeing project debt) is small, especially under a continuing system of price regulation. Any potential competitive problems can be guarded against through (1) imposing proper conditions in the license to construct the transportation system (including the non-
discriminatory conditions under section 13(a) of the Act; (2) monitoring gas purchase contracts between gas producers and gas transmission companies; (3) requiring the disclosure of any collateral agreements between producers and transmission companies; (4) requiring government scrutiny and approval of any plans for gas reallocation or displacement, and government monitoring of any industry discussions to derive such plans; and (5) imposing regulatory sanctions in any specific cases of abuse that may arise.

EXHIBIT

DEPARTMENT OF JUSTICE,
Washington, DC, August 9, 1977.

Mr. LESLIE J. GOLDMAN,
Assistant Administrator, Energy Resources Development, The White House, Washington, DC.

DEAR MR. GOLDMAN: The Attorney General submitted his Reports on the competitive aspects of the Alaska natural gas transportation system to the President and to the Congress on July 14, 1977. One of the conclusions drawn in those Reports was that producers of substantial amounts of natural gas should not be permitted to own any portion of or participate in any manner in the selected Alaska natural gas transportation system.

The Department has been requested by the Alaska Natural Gas Task Force to consider whether this recommendation precludes the participation of the Alaskan natural gas producers in the financing of the selected project. We have been requested to focus our attention on the two routes still under active consideration—the all-pipeline route proposed by Alcan Pipeline Company and the pipeline-LNG route proposed by El Paso Alaska Company.

The Department's recommendation concerning gas producer ownership and participation was based on the premise that such ownership or participation under a regime of deregulated or relaxed wellhead price regulation could lead to the evasion of effective pipeline regulation and create the opportunity for the earning of monopoly profits through anticompetitive activity. Despite the continuation of wellhead price regulation and the present lack of gas producer ownership or participation in either the Alcan or El Paso projects, we continue to express our concerns on this important issue, since the long term status of wellhead price regulation appears uncertain and it is not now clear who will be the ultimate owners of these projects. However, our concern about gas producer ownership of the projects does not mean that there would necessarily be antitrust objections to participation in project financing on the part of Alaskan gas producers.

From consultation with other members of the Alaskan Natural Gas Task Force, we understand that gas producer participation in the financing of the selected project may be essential to the success of the project. We believe, therefore, that consistent with our recommendations producers could be involved in the guarantee of a portion of the project debt. We view this guarantee as consistent with our recommendations so long as the gas producers would not be equity members of the sponsoring consortium, would not have any voting power, would not have any role in the management or
operations of the transportation system once the system would become operational and would be obliged to terminate their guarantor roles upon completion of the project and the tariffs going into effect. Any role in the management of the transportation system prior to the system becoming operational would be minimal and consistent with the size of the guarantee and would not lead to the types of anticompetitive conduct indicated in the Attorney General's Report on the Alaskan natural gas transportation system and in this letter.

Although not opposed to some financial backstopping under these conditions, we reiterate our opposition to any type of financial participation by producers that would enable them to engage in any form of anticompetitive conduct, such as the restriction of pipeline throughput, the denial of access to nonowners, or the resistance or denial of future expansion of pipeline capacity.

The Department recognizes that if the gas producers were to act as debt guarantors they would have the right to request conditions to protect their financial involvement. The Department would not oppose conditions to this effect so long as the conditions would not give rise to the potential for competitive abuse, including the power to veto procompetitive policies, referred to above. In this regard, we would expect to urge the Federal Power Commission, or its successor agency, at the appropriate time, to utilize its approval power over gas purchase contracts and, more generally, over project financing plans, to ensure that producer-imposed conditions do not conflict with the antitrust objectives outlined in the Attorney General's Reports.

In addition, as a further safeguard, the Department suggests that it review all the terms and conditions of any financial guarantee of a portion of the project debt negotiated with the Alaskan gas producers. You are assured of our willingness to assist in exploring and developing an appropriate method of gas producer financial participation in an Alaskan natural gas transportation system that will not subvert the competitive spirit and intent of the recommendations contained in our Reports.

Sincerely yours,

HUGH P. MORRISON, Jr.,
Acting Assistant Attorney General,
Antitrust Division.

CHAPTER VIII—NATIONAL SECURITY

The Department of Defense (DOD) provided a study on the national security implications of the proposed Alaska gas transportation systems both to the Department of the Interior, for its report required by the Trans-Alaska (Oil) Pipeline Act (P.L. 93–153), and to the Federal Power Commission (FPC) for its use in evaluating the proposals. The conclusions of the DOD study were that analysis of military factors alone would not indicate an overriding preference for one route over another.

A DOD representative testified on the study before the FPC and was cross-examined by representatives of both El Paso and

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Arctic Gas, after direct examination by the FPC's Administrative Law Judge Litt and a staff attorney. As reported by Judge Litt:

* * * the evidence shows each system has its advantages and disadvantages. El Paso's entire pipeline portion of its system is under U.S. control, and thus defense strategy may be facilitated. However, El Paso's project tends to concentrate potential targets, like its liquefaction and regasification plants, whose destruction would present major, long-term outage problems. Similarly, both the oil and gas pipelines would be susceptible to concentrated attack or sabotage on the Yukon River Bridge. Arctic Gas and Alcan, while not concentrating vulnerable facilities at single locations or subjecting their systems to interdiction at sea, suffer somewhat from the length and location of their pipelines. Moreover, these projects must rely on Canadian security forces for defense over much of their pipeline lengths.23

The consensus was that each of the proposed systems has some national security problems which are peculiar to that system, and that the extremely modest danger due to hostile acts is of some concern, whether such acts are in wartime or are acts of sabotage. However, such danger was considered to be far less likely to disrupt pipeline operations than system failures of a purely natural or mechanical nature.

DOD also submitted a report to the President on July 1 commenting on the national security implications of the FPC's Recommendation to the President.24 In that report, DOD reiterated its conclusion that there is no overriding preference for one route over another when analysis is based on military factors alone. However, the report pointed out that dependence on imported oil presents a grave danger to the national security, and stressed that completion of a transportation system for delivery of Alaska North Slope natural gas to the contiguous 48-states must be considered an important national security objective.

With the Alcan joint project with Canada, we believe Canada will have a major interest in maintaining a uninterrupted flow of gas through the pipeline as well as a treaty obligation to do so under the recently ratified pipeline treaty. First, the Canadian companies which will be the owners of the Pipeline in Canada will have a substantial investment which they will want to have protected. Canadian investors would be adversely affected by any interruption in throughput. Second, remote communities in both the Yukon Territory and the western provinces will be served by the Pipeline, and any interruption in flow will directly affect availability of gas to those communities. Finally, a much larger number of Canadian gas consumers will have a direct interest in uninterrupted throughput when the Dempster Line comes into service from the Mackenzie Delta. The Canadians expect the Dempster Line to be built within several years of initiation of service on the main line.

Provision for access to the Mackenzie Delta reserves will have beneficial effects on the national security of both countries due to decreased dependence on imported oil. Canadian oil import requirements will be directly reduced by availability of gas to Canadian consumers. Access to frontier gas reserves will allow Canada to fulfill its current gas export commitments, preventing an increased degree of U.S. oil import dependence due to curtailment of Canadian gas supplies. Attaching Canadian frontier gas and providing a stimulus to the Canadian oil and gas producing industry may ultimately allow some increase in the level of Canadian gas exports, which would allow even further reduction in oil import dependence.

CHAPTER IX—THE WESTERN LEG

THE AUTHORIZATION OF FACILITIES

There are two basic methods for delivering Alaskan natural gas to the West Coast. The first method is to construct a “Western Leg” to the Alcan system by constructing a new pipeline and some looping in Canada from Caroline Junction to Kingsgate, and by increasing the capacity of the existing Pacific Gas Transmission (PGT) and Pacific Gas and Electric (PG&E) pipeline, also through looping. A fully looped system would cost about $770 million (1975 dollars).

The second method is to deliver the gas to the West by “displacement.” The Northern Border section of the Alcan project to Chicago could be sized to deliver all Alaska gas to the Midwest. Natural gas from West Texas and New Mexico that otherwise would flow to the Midwest could then be diverted to the West Coast through the El Paso, Transwestern and Northwest pipeline systems.

As set forth in the Presidential Decision, construction of a Western Leg will be authorized for direct delivery of Alaskan gas to the West Coast. See page 20 of the Decision. The Western Leg facilities proposed by the sponsors in the FPC hearings (i.e., the “1580 Design”) will be authorized for “construction and initial operation.” All such facilities will be entitled to the special mandatory certification and expediting procedures provided by ANGTA.

However, the facilities proposed in the “1580 Design” will be subject to a final review and possible adjustment prior to final certification by the FPC. As in the case of the Northern Border system, the Secretary of Energy shall determine at the time of certification whether the facilities proposed in the “1580 Design” are larger or smaller than necessary to handle the contracted supplies of Alaskan gas and Canadian exports and whether “preconstruction” is necessary to accommodate short-term excess deliveries of Canadian gas from Alberta. The “1580 Design” facilities would be needed to handle exports from Canada continuing beyond current contract expiration dates or if new gas supplies from Alaska are developed. Furthermore, complete delivery by displacement would not be feasible if Mexican gas becomes available and the 30 inch gas pipeline that is part of the El Paso system between Texas and California is converted to an oil pipeline for use in the Sohio project to transport surplus Alaskan crude oil.
At the time of certification, however, when there will likely be better information upon which to project future gas supplies, the "1580 Design" may prove not to be the appropriate size. Therefore, the Decision does not make an irrevocable commitment to construct new capacity that is either too small or too large for the projected needs. Prior to final certification of a Western Leg, the Secretary of Energy shall make the precise determination of facility size and volume to account for material changes in the facts, if any, since the Presidential decision. The Western Leg may also be utilized in connection with short-term deliveries from Canada.

The Western Leg facilities required for direct delivery will depend on several estimates—the estimated Western share of Alaskan gas, the estimated volume of Canadian exports, the amounts of Mexican gas, and the abandonment of the El Paso gas line in favor of the Sohio oil transport system. These estimates provide the basis for the decision to authorize the Western Leg.

The Western share of Alaskan gas

The proportion of natural gas that is distributed to a particular region of the country is ordinarily determined by private contract between the producers, on the one hand, and the purchasers which are usually interstate pipeline or local distribution companies, on the other.

There is no reason to change these rules for Alaskan gas. A region of the country that is arbitrarily and inequitably deprived of its share of Alaskan gas will have the opportunity to seek relief from the FPC. But, in the absence of such discrimination, regional distribution of Alaska gas will be made by the usual means of private agreement.

Since contracts for the purchase and sale of Alaska North Slope gas have not yet been executed, it cannot now be determined with precision how much of that gas will eventually be destined for the western states. However, in the absence of sales contracts, it is reasonable to assume that 30 percent of the Alaskan gas will be purchased by parties served by the Western Leg. It is also assumed that deliveries of Alaskan gas to the lower 48 States will begin at 2 bcfd in 1983 and increase to about 2.4 bcfd within a few years. For purposes of this analysis, then approximately 700 mmcf/d will be considered the maximum Western share of Alaskan gas through this period.

Increased and accelerated Canadian exports

In its July 4th decision authorizing the Alcan proposal, the Canadian National Energy Board (NEB) assured the continuation of current Canadian supplies to the West. It rejected outright any suggestion that existing Canadian agreements to export gas to U.S. markets not be honored. The NEB also concluded that gas production from the established fields of Alberta and British Columbia would exceed total demand, including exports, by as much as 400 bcf in 1978, and had created a temporary excess supply.

It proposed that the current Canadian "gas bubble" be sold to export customers, either as "predeliveries" on contract volumes that would otherwise be delivered in the 1984-90 periods, or under an "ironclad" guarantee that it would be replaced later by Alaskan gas.
delivered in Canada. And finally, in order to assure the delivery of these additional volumes, it recommended the “preconstruction” of that portion of the total system that would be located in southern Canada.\footnote{30}

The recently signed Agreement on Principles makes it even more likely that there will be an increase or acceleration of gas exports from Alberta. By providing Canada with access to frontier gas reserves in the Mackenzie Delta, the Alcan proposal stimulates the gas industry in Canada, and enhances the availability of Canadian supplies for absolute increases in exports to the United States.

The following sections set forth the analysis of the capacity available in existing pipeline systems to transport these additional volumes of Alaskan or Canadian gas directly or by displacement to the Western States.

**ESTIMATED EXCESS PIPELINE CAPACITY IN EXISTING SYSTEMS**

Existing facilities of the Western States

At the present time, the West is provided with most of its natural gas via interstate pipelines from two major producing areas—the established gas fields of the southwestern United States, particularly in the Permian and San Juan Basins, and the Alberta and British Columbia reserves in Canada. For purposes of this analysis, there are two principal interstate pipeline systems that should be considered in evaluating the capacity requirements of Western States. They are: the Pacific Gas Transmission and Pacific Gas & Electric systems from Kingsgate, B.C. to Antioch, California, which supply Washington, Oregon and Idaho markets, as well as California, with Canadian gas, and (2) the El Paso and Transwestern systems in the Southwest (referred to collectively hereafter as the Southwest pipeline system), which deliver gas from the Permian and San Juan Basins to California, Arizona and New Mexico. As will be seen below, the full share of Alaskan gas plus additional Canadian supplies could not be delivered directly by the PGT and PG&E systems for at least several years and in the interim might well be used and exceed the capacities of the El Paso and Transwestern systems that would be used for displacement.

Direct delivery

As noted, the Western Leg proposal would amount principally to looping of the existing pipeline facilities from Alberta to California. The existing system could not itself be utilized for direct deliveries of any Alaskan or additional Canadian gas because it is now being utilized to capacity and will be until at least later 1985.

There are four principal contracts pursuant to which Canadian gas is now delivered via the PGT and PG&E systems directly to California, their volumes and the expected expiration dates are as follows:

<table>
<thead>
<tr>
<th>Authorized average daily volume (in mcf/d)</th>
<th>Expiration date</th>
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</thead>
<tbody>
<tr>
<td>184.9</td>
<td>10-31-85</td>
</tr>
</tbody>
</table>

Thus, even if none of these contracts is renewed—the likelihood of which is reduced as a result of the Agreement on Principles—direct delivery of substantial volumes in existing facilities will be impossible for the first three or four years of an Alaskan gas transportation system.

Displacement

Under the "displacement" option, the Western share of Alaskan gas would not be directly delivered to the West but moved there indirectly through exchange arrangements with customers of the Northern border system.

In order to carry out the displacement scheme, the capacity of the Northern Border system would have to be such as to accomplish the direct delivery of both the East's and West's share of North Slope gas. Full displacement would require either that the proposed 42-inch Northern Border line south of Empress, Alberta, be fully-powered or that a 48-inch line be constructed over this segment to carry the same volume of gas, at an additional capital cost but with the flexibility to increase capacity.

On the surface, displacement appears to be the most cost effective method. The $770 million (in 1975 dollars) cost of a fully looped Western Leg could be avoided. Increasing the capacity of the Northern Border system would be much less capital intensive; $258 million for fully powering the 42-inch Northern Border System, and $404 million for increasing the pipe diameter to 48-inch. In either case the cost of service for the displacement plan would be about $50 million per year less than direct delivery. However, there are several reasons why displacement is not a desirable long term method in this situation.

(a) Any displacement plan would consume more energy than direct delivery to the West. The West's Alaska gas essentially would move east to Chicago and then back west from the Permian or San Juan basins. By contrast, the looping of the PGT and PG&E systems would increase the overall fuel efficiency for those systems. The difference is about 25 bcf of gas per year, worth $68 million at $2.60 per mmbtu.

(b) Use of displacement to transport all of the West's Alaskan gas would create capacity constraints on the existing El Paso and Transwestern lines if:

One El Paso 30-inch line is converted to an oil line by the Sohio Project;
Substantial volumes of Mexican gas become available for transportation to the West Coast;
There are any advanced or increased deliveries of Canadian gas to the U.S. which would also have to be moved West by displacement; and

The Algeria II LNG project is completed on schedule.

For purposes of analysis, all four of these conditions should be regarded as reasonably likely to occur.
While the Federal Government has not specifically endorsed the Sohio Project, it has endorsed generally the need for the expeditious construction of a pipeline to transport surplus Alaskan crude oil from the West Coast to refining markets east of the Rocky Mountains. Such a system is needed to provide economic and efficient transportation of Alaska North Slope oil to markets in the U.S. The conversion of the El Paso pipeline by the Sohio Project, which is assumed in the present analysis, will result in a substantial decrease in overall capacity of the Southwest gas pipeline system.

Recent events have given cause for considerable optimism about increased exports from Mexico which would enter through the Southwestern and El Paso system. Petroleos Mexicanos (Pemex), the government-controlled oil and gas monopoly in Mexico, has recently expressed its intention to construct a 48-inch, 850-mile pipeline from the Reforma fields in Chiapas and Tabasco to the U.S. border near McAllen, Texas. Pemex expects initially to deliver 1 bcf/d to the U.S. upon completion of the pipeline (probably not before 1980), and to increase the flow to 2 bcf/d by about 1982. On August 3, 1977, Pemex and six U.S. companies signed a memorandum evidencing their intention to enter into supplier-purchaser relationships for 6 years, renewable for another 6-year term if the purchasers meet the best tender Pemex may have for the gas at the end of the first term.

Notwithstanding several remaining uncertainties, it now appears likely that the Mexican Project will soon become a significant new source of gas supply in the Southwest. Between El Paso and transwestern, the West could reasonably expect to receive about 220 mmcf/d of Mexican gas by 1980 and a total of 440 mmcf/d beginning in 1982.

As discussed above and throughout this Decision and Report, the Alcan system will offer the potential for accelerated delivery of Canadian exports under existing contracts; it will also enhance the overall availability of Canadian gas for absolute increases in exports. Since these additional volumes of Canadian gas could not be delivered directly in the PGT and PG&E systems, as noted above, they would also have to be displaced through the El Paso and Southwestern systems for delivery to the West.

Finally, the Algeria II project, El Paso's application for which is pending before the FPC, would deliver up to 325 mmcf/d of regasified LNG from the Texas Gulf Coast to the Southwest by as early as 1983 and could deliver a total of 650 mmcf/d by the following year.

Under these conditions, delivery of Alaskan gas through the Northern Border system for displacement to the West would preempt all the excess capacity now available in the existing Southwest pipeline system from the Permian and San Juan Basins. Any substantial new supplies from the deep Permian formations—or increased supplies from coal gasification projects—would compound the problem.

Indeed, under optimistic assumptions about future gas supplies to the West and the existing capacity to California which would be

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Obtained and made public by the Natural Resources Defense Council, March/April 2002
utilized, there is a serious risk of capacity shortage for the years 1983–87. This shortage can be determined from the data set forth in Exhibit 1.

EXHIBIT 1

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<tr>
<td>Transwestern</td>
<td>785</td>
<td>785</td>
<td>785</td>
<td>785</td>
<td>785</td>
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<td>Total capacity</td>
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<td>4,059</td>
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<table>
<thead>
<tr>
<th>Supply (mmcf):</th>
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<tr>
<td>Permian Basin</td>
<td>1,551</td>
<td>1,448</td>
<td>1,356</td>
<td>1,271</td>
<td>1,190</td>
<td>1,114</td>
<td>1,042</td>
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<tr>
<td>San Juan Basin</td>
<td>1,253</td>
<td>1,247</td>
<td>1,209</td>
<td>1,176</td>
<td>1,144</td>
<td>1,113</td>
<td>1,083</td>
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<tr>
<td>Canadian short-term (by displacement)</td>
<td>221</td>
<td>167</td>
<td>112</td>
<td>56</td>
<td>440</td>
<td>440</td>
<td>440</td>
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<tr>
<td>Mexican</td>
<td>220</td>
<td>440</td>
<td>440</td>
<td>440</td>
<td>440</td>
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<td>440</td>
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<tr>
<td>Algerian LNG</td>
<td>325</td>
<td>650</td>
<td>650</td>
<td>650</td>
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<tr>
<td>Coal gas</td>
<td></td>
<td></td>
<td>70</td>
<td>140</td>
<td>280</td>
<td></td>
<td></td>
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<tr>
<td>Total supply</td>
<td>3,245</td>
<td>3,302</td>
<td>3,444</td>
<td>3,593</td>
<td>3,494</td>
<td>3,457</td>
<td>3,495</td>
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<tr>
<td>Excess capacity</td>
<td>814</td>
<td>757</td>
<td>615</td>
<td>466</td>
<td>555</td>
<td>602</td>
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<td>Less Alaskan gas by displacement</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>522</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Capacity excess (shortage)</td>
<td>954</td>
<td>757</td>
<td>(65)</td>
<td>(234)</td>
<td>(135)</td>
<td>80</td>
<td>444</td>
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</table>

*Assumes that existing Canadian contracts will not be renewed.

The Exhibit indicates that without a Western Leg, a displacement scheme capacity shortage could exist in 1983–85 and would be uncomfortably close in 1986. If current Canadian supply contracts are renewed, as it is hoped they will be, a capacity shortage could exist in 1983 and later years as well.

Finally, it should be noted that full utilization of the Northern Border system for a displacement scheme would preclude the ability to expand the Northern Border system at a low capital cost for additional deliveries to the East if more Alaska gas becomes available.

The Nation's gas delivery system must have the overall flexibility to make a rapid and economic response to many variables—the level of future exports from Mexico, the level of future exports from Canada, the rate at which new supplies of Alaskan gas can become available, and the rate at which LNG and coal gasification projects are developed. Therefore, to ensure sufficient capacity for future supplies to California and other Western States, provision should be made for direct delivery of Alaska gas to the West.

SIZE AND VOLUME OF A WESTERN LEG

The approved facilities for the Western Leg are embodied in the so-called "1580 Design." It would require a 36-inch, 176-mile pipeline, to be constructed by the Alberta Gas Trunkline Ltd. (AGT), from James River Junction in Alberta to Coleman on the British Columbia border, where it would connect with the existing Alberta Natural Gas Company Ltd. (ANG) line in British Columbia. One hundred and five miles of the existing ANG line, from Coleman to Kingsgate on the U.S. border, would be looped with 36-inch pipe. In the U.S., 612 miles of the PGT line from the Cana-
dian border to Malin, Oregon, and 297 miles of the PG&E line from Malin to Antioch, California, would also be looped with 36-inch pipe. No new compression would have to be added to the existing systems.

With this project, 659 mmcf/d of North Slope gas could be delivered directly to the western U.S., which is roughly the total expected volume of Alaskan gas delivered to the West. PGT intends to deliver 22 mmcf/d of this amount to Northwest Pipeline Company for distribution in the Pacific Northwest, and the remainder would be delivered to California, where 200 mmcf/d would be distributed by PG&E in the North and 437 mmcf/d would be distributed by the Southern California Gas Company in the South. Any share of Alaskan gas or additional Canadian gas greater than 659 mmcf/d would not require a new facility but could readily be delivered to the West by displacement. There would easily be sufficient capacity in the Southwest system to absorb this relatively small volume of Western gas.

CONCLUSION

The evidence clearly suggests that the natural gas pipeline capacity available at present will not be adequate to accommodate both the Sohio Project and the movement of Alaskan gas to the West in the mid-1980's and perhaps beyond. While this conclusion is based on optimistic supply projections, it nevertheless is a significant probability on the basis of which a Western Leg Facility should be planned.

There is some risk in authorizing a Western Leg that it or other existing pipeline systems to the West could at some time become somewhat underutilized, perhaps resulting in some increase in per unit costs to gas consumers. But the consequences of not authorizing a Western Leg are even greater. Not only could failure to build a Western Leg under the most reasonable supply projections cause higher direct costs to the consumer, but it could also greatly reduce the West's flexibility to receive new gas supplies if and when they develop in the future. Indeed, whether gas supplies in addition to what are presently projected will be available from sources like Canada and Mexico may well be dictated by whether gas pipeline capacity is available to transport it. If the almost unanimous comments of their elected officials are any indication, the people of the West are willing to accept whatever additional cost may be involved in order to be assured that pipeline capacity will be adequate to meet all future contingencies.

Prior to final certification of a Western Leg, there may be better information about potential supplies to determine whether the proposed "1580 Design" is over- or under-sized for the anticipated need. Before the issuance of a final certificate of public convenience and necessity, the Secretary of Energy will determine the size and volume of the Western Leg to be certified, as well as review the need for any pre-building to take direct deliveries for the West Coast of any short-term increases in Canadians exports from Alberta. Any deviation from the capacity of the "1580 Design" will directly reflect any material changes in gas supply or pipeline capacity projections that occur between now and the date the certificate...
Chapter X—Relationship of the Decision to the Recommendation of the Federal Power Commission

Section 7(b) of ANGTA requires a statement of the "reasons for any revision, modification of, or substitution for the Commission (FPC) recommendation."

This Decision is consistent with the FPC recommendation as set forth in its letter of transmittal dated May 2, 1977:

We recommend that an overland route through Canada be selected, if such a route is made available by the Government of Canada on acceptable terms and conditions.

The condition has been met, and an overland route is selected by this Decision.

Two FPC Commissioners recommended the Alcan system. The other two FPC Commissioners recommended the Arctic Gas system "conditioned upon timely affirmative decisions by the Government of Canada to make the route available," but they said that otherwise Alcan should be approved. There was a failure of that condition with respect to Arctic Gas when the Arctic Gas route was rejected by the Canadian National Energy Board. Therefore, this Decision is in accordance with the specific system recommendation of all FPC members who participated in the May 2, 1977, Recommendation to the President.32

The Federal Power Commission recommended the deferral for "one to two years the certification of any new facilities for the western leg . . . " This Decision provides for approval of the western leg facilities subject to the same condition as other portions of the project. The Secretary of DOE is authorized to make a determination of the necessary capacity for both the western and eastern legs at the time of the issuance of the final certificate of public convenience and necessity. This approval is necessary to entitle all such facilities to the expeditious authorization pursuant to Section 9 of ANGTA.

This Decision differs from the Recommendation of the Federal Power Commission in one other material respect. The Commission suggested alternative financing plans—a private risk bearing model and a consumer risk bearing model. In conjunction with private risk bearing, the FPC suggested the use of a "formula" price mechanism whereby a city gate market value indicator (MVI) price would be established. The wellhead price would be the difference between the transportation cost and the MVI price.

This Decision requires a private assumption of the risk of noncompletion. However, the determination of the wellhead price should be pursuant to the pricing provisions in the pending National Energy Act. Those provisions, along with the financing proposals made herein, will ensure an equitable sharing of project

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32 The only difference between the Alcan system before the Federal Power Commission and the Alcan system herein approved is the contemplated expansion of pipeline capacity south of Whitehorse, Yukon, and a pipeline rerouting near Whitehorse to facilitate any future connection of Mackenzie Delta Reserves.

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risks and constitute the best method for securing a private financing of the project.

CHAPTER XI—AGREEMENT WITH CANADA

ISSUES

There are certain potential risks associated with any project involving more than one country. These derive from complications which arise when a large scale construction project is subject to the jurisdiction of two federal governments, Canada and the U.S., and the interests of the two governments are not always identical. The potential risks involved were explored extensively during the FPC proceedings on Alaska gas, and further in the Senate hearings and debates prior to ratification of the Transit Pipeline Treaty with Canada. These debates served to crystallize the most important of these issues.

An example of the divergence of interests of the two countries was the re-routing of the main pipeline through Dawson which was required by the NEB's July 4th Decision. That re-routing was designed from the Canadian perspective to bring a major gas transportation system within reach of their Mackenzie Delta reserves. From the U.S. perspective, the re-routing was a costly alternative to accommodate an uncertain eventuality—construction of the Dempster Line—which might never occur.

During the course of the negotiations, a compromise was worked out on this point which effectively serves the interests of both countries. In return for routing the main line along the original Alcan route, the U.S. agreed to share the costs of extending the Dempster Highway lateral from Dawson to Whitehorse. Whitehorse will be the point at which the lateral pipeline from the Mackenzie Delta gas fields connects to the main line when and if the lateral is built.

Virtually all of the other issues which were raised in the FPC proceedings and the Senate hearings and debates were the subject of lengthy negotiations with the Canadians. The discussion which follows covers the issues of primary Canadian concern in reaching this decision, along with the resolution of those issues which has been achieved through the negotiations.

Taxes and impact assistance

The first risk with a trans-Canada system is unanticipated costs arising from potential Canadian taxes and impact assistance. The FPC proceeding considered the risk of taxes imposed by the Canadian provincial governments, and it was concluded that Canadian legislation or compacts would be necessary to bind the Canadian provinces directly to the antidiscriminatory tax provisions of the Treaty.

The Canadian Government has undertaken to negotiate Federal-Provincial agreements with the three western provinces—British Columbia, Alberta and Saskatchewan—to assure their implementation of the Treaty. The Federal Government has obtained public statements from all three provinces endorsing the principles of the treaty, and those statements are annexed and made part of the Agreement. These statements and subsequent Federal—Provin-
cial Agreements, backing up the unequivocal responsibility of the Canadian Government under the Treaty, will provide adequate assurance on this point.

The degree of practical protection afforded by the Treaty was subject to some question in the Yukon Territory, as there are currently no similar pipelines against which to measure possible discriminatory treatment. Therefore, ad valorem (property) taxation in the Yukon was negotiated as part of the Agreement on Principles. The agreed rate of property taxation is essentially comparable to that in Alaska, and will continue for 25 years or until a similar pipeline is built, at which time the Treaty protections will apply. The only contingency which would change the agreed taxation regime is if the State of Alaska changes its property tax regime.

A related issue was the $200 million socioeconomic impact payment recommended by the NEB in its July 4th decision. There are precedents in the United States for socioeconomic impact assistance. Normally, however, compensation for such impacts has been through federal government loans and subsidies. In negotiations with Canadian representatives, it was strongly urged that this payment be structured as a loan from the pipeline company to be repaid through reduction of future property-tax liability. In fact, such an arrangement has been worked out between the Canadian project sponsors and the Canadian government. As a result, cost of service to U.S. consumers will not be affected by this arrangement.

Native claims

A source of additional concern is the settlement of Canadian native claims. Some parties have questioned whether the cost of the settlement—the cost was almost $1 billion in the case of Alaska native claims—would be imposed on consumers of Alaska gas through some type of transit fee or tax. The Canadian government has publicly stated on a number of occasions that it considers settlement of native claims as an internal Canadian matter to be resolved separately from any trans-Canada pipeline consideration. Canada has also undertaken to assure the United States that no charges against the pipeline related to the settlement of such claims will be levied.

Another concern has been that the uncertain status of a Canadian native claims settlement may affect Alcan's ability to secure financing. Lenders might be reluctant to commit funds without firm assurance on the final schedule for completion of the pipeline.

The Agreement on Principles commits both countries to a timetable which is specified in the Agreement. The Agreement also commits both countries to seek legislation as required to remove any delays or impediments to timely and efficient construction. This legislation, particularly when combined with the incentive scheme to reduce cost overruns in Canada, will provide the strongest possible assurances to lenders that both governments intend for this project to be completed as quickly, and at as low a cost, as possible.

"Canadian Content" regulations

It has been argued that the "Canadian content" regulations, issued by the NEB to assure that Canadian firms and workers re-
ceive the maximum economic benefits from pipeline projects in Canada, could increase costs. One part of the Agreement specifically addresses this point, and commits each government to the principle that the supply of goods and services will be on generally competitive terms. Specific remedies are included in that section of the Agreement of consideration in the event that the competitive terms of supply which are sought by the Agreement are not being met.

Employment

Finally, a trans-Canada project would have fewer employment opportunities for U.S. workers than the El Paso project. It is estimated that during the construction period, El Paso would account for 324,000 man-years of employment in the United States compared to 221,000 for Alcan. In the year of greatest employment, El Paso would have a 121,000 to 84,000 man-year advantage over Alcan.

The El Paso project is also more labor intensive. Such increased employment opportunities, however, show up in a significantly increased cost of service for the El Paso system. Labor costs in Canada are lower than in the United States, and the operating costs of an all-pipeline system through Canada will be significantly lower than for the El Paso LNG system. Also, the lower cost and higher fuel efficiency of a trans-Canada pipeline make its NNEB substantially higher than that of El Paso.

The important point is that neither project will solve the unemployment problems of either country. Although the difference in man-years of employment between the two projects is large in an absolute sense, it translates into a 0.035 percent difference in the U.S. unemployment rate. This difference would be offset by the unemployment impacts on the U.S. of curtailed Canadian gas deliveries in the event that lack of access to the Mackenzie Delta reserves reduced Canada’s ability to meet existing export commitments.

The Agreement on Principles provides assurances on routes, taxation levels, project delays, and other critical matters. A section-by-section analysis is provided below. This Agreement, along with the Transit Pipeline Treaty, protects the project from unfair or discriminatory charges that would otherwise threaten the savings to U.S. consumers. Canada also has an excellent record of living up to its commitments in similar joint agreements with the U.S. In fact, the kind of assurance on time, taxes, routes, tariffs and a host of other issues spelled out in the Agreement on Principles probably exceeds the level of commitment that would have been available at this time on any all-American project.

ANALYSIS OF THE AGREEMENT WITH THE GOVERNMENT OF CANADA

Paragraph 1: Pipeline route

This paragraph defines the Pipeline which is the subject of the Agreement as that which will follow the route described in the first Annex to the Agreement, and requires that all necessary action be
taken to authorize the construction and operation of the Pipeline consistent with the principles of the Agreement.

Paragraph 2: Expeditious construction; timetable

Subparagraph (a) lays out a timetable for commencement of construction and commits both Governments to take measures to complete issuance of all authorizations in time to allow initial operation of the Pipeline by January 1, 1983. The timetable calls for construction beginning in Alaska by January 1, 1980, and main line pipelaying beginning in the Yukon by January 1, 1981. Although heavy pipeline construction activity in the Yukon cannot start before early 1981, preconstruction activities, such as final routing studies and highway bridge reinforcement for heavy equipment traffic, can proceed prior to that date.

Subparagraph (b) assures that all charges for routine authorizations, such as licenses and certificates, as well as charges for right-of-way, will just be reasonable and nondiscriminatory. Subparagraph (c) commits both Governments to facilitating expeditious construction of the Pipeline consistent with the respective regulatory requirements of the two Governments, such as those in the areas of worker safety, environmental protection, and quality control.

Paragraph 3: Capacity of pipeline and availability of gas

Subparagraph (a) deals with the initial throughput capacity of the Pipeline, requiring that this capacity be sufficient to meet the contractual requirements of shippers when those requirements arise. The intention is that it would initially be sized for 2.4 billion cubic feet per day (bcfd) of gas from Alaska, with provision for up to 1.2 bcfd of gas from Canada's Mackenzie Delta at the time the Dempster Highway lateral pipeline (called "the Dempster Line") is built to connect those reserves. It is expected that this intention will be carried out by installing larger-diameter or thicker-walled pipe south of the interconnection point near Whitehorse, then adding additional compressor capacity at the time the Dempster Line is constructed. The choice between larger-diameter and thicker-walled pipe will be made at the conclusion of a testing program to assess the safety and reliability of the two alternatives. The testing program is provided for in Paragraph 10.

Subparagraph (a) also provides that authorizations will be granted, subject to regulatory requirements, for the Dempster Line and any further expansions of capacity (such as that which may subsequently be requested to transport additional Alaska gas).

Subparagraph (b) defines and limits arrangement whereby the Pipeline will provide gas service to remote communities, through or near which it passes. Prior to the time when the Dempster Line is in service, the gas provided will be Alaska gas, subject to contemporaneous replacement by equivalent volumes of Canadian gas being made available for export.

There is a limit of $5 million Canadian on capital costs to be incurred by U.S. shippers for provision of this service. Costs outside that limit will be reflected in the cost of service to the communities involved.